Message

From: Coover, Curt [CooverCA@cdmsmith.com]
Sent: 2/28/2019 11:42:55 PM
To: Greene, Nikia [Greene.Nikia@epa.gov]; David Shanight [shanightdt@cdmsmith.com]; Chapin Storrar [storrarcs@cdmsmith.com]
Subject: RE: SSTOU SW, GW, Instream Sediment and Macroinvertebrate Monitoring
Attachments: 2014-2016.xlsx

Flag: Follow up

The PEC is not exceeded at SS-01 and should be attainable. Not necessarily a bad guidance number, they just didn't achieve it consistently in SST. Probably some influence from upstream. Obvious problem at SS-15A (upstream of German Gulch in Durant Canyon). Other stations also meet the PEC and LOAEL: SS-11C (mostly), SS-11D, SS-14, and SS-15G (German Gulch). Addressing the sources in BPSOU should make the chart look more like SS-01 at least for a few stations downstream.

Yes Jim, we know there is contaminated sediment in BPSOU.

From: Ford, Jim <JFord@mt.gov>
Sent: Thursday, February 28, 2019 4:14 PM
To: Josh Bryson (BP) <josh.bryson@bp.com>
Cc: Nikia Greene (EPA) <Greene.Nikia@epa.gov>; Cunneen, Padraig <PCunneen@mt.gov>; Reed, Daryl <dreed@mt.gov>; Don Booth <donbooth10@gmail.com>; Coover, Curt <CooverCA@cdmsmith.com>; Shanight, David <ShanightDT@cdmsmith.com>; Eric Hassler (BSB) <ehassler@bsb.mt.gov>; Storrar, Chapin S. <storrarcs@cdmsmith.com>
Subject: SSTOU SW, GW, Instream Sediment and Macroinvertebrate Monitoring

Josh,

As promised attached is the SSTOU performance monitoring plan which evaluates the remedial actions in the SSTOU including: SW, instream sediment, GW, vadose zone water, macroinvertibrates, periphyton, and fish. This report summarizes results of data collected for each of these media and evaluates progress toward attainment of performance goals for 2017. The 1995 ROD identifies remediation goals and performance standards for SW and GW. The performance monitoring program for the SSTOU evaluates a broader range of parameters than these ROD-required performance standards. The performance monitoring program identifies performance goals for the other parameters as a means of effectively discuss and evaluate the effectiveness of the remedy and restoration actions taken in the SSTOU. Use of the term "performance goal" or similar terms in this report is not intended to make each goal a ROD-required remediation goal or performance standard.

This sampling has been going on for years so if you want to know what the State expects in a instream sediment, macroinvertebrate, SW, etc. sampling program here it is. Please use this as a guide as I'm sure it will be in alignment with the States expectations and comments on your draft document(s). I can get you the SAPs/QAPPs if you want them. Just let me know.

Performance goals were not identified for instream sediments in the SSTOU ROD. The 1998 ESD adopted criteria for sediment removal which provided for removal of the all contaminated streambed material and replacement with clean material throughout the OU. In lieu of specific numeric performance goals for instream sediment, this monitoring program has identified consensus-based sediment quality guidelines including the "threshold effect concentrations" (TECs) and "probable effect concentrations" (PECs) from MacDonald. In addition to comparing sediment contaminant concentrations to those reference values, sediment monitoring is conducted to determine the extent to which the streambed may be re-contaminated from upstream or other sources. As with surface water, the SSTOU ROD also specified that instream sediment monitoring be conducted quarterly at each surface water sampling site for each

contaminant. Sediment samples were analyzed for contaminant concentrations in three size fractions (<0.063 mm, 0.063-1 mm, and 1-2 mm) and for the weighted mean concentration among those size fractions.

Table 2-1. Reference values for contaminant concern concen

trations (dry weight [DW]) of instream sediments in the Streamside

TailingsOperableUnit.Thethresholdeffectconcentration(TEC)

a n d p r o b a b l e e f f e c t c o n c e n t r a t i o n (P E C) w e r e d e s c r i b e d i n M a c D o n a

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Contaminant of Concern	Threshold Effect Concentration (mg/kg-DW)	Probable Effect Concentration (mg/kg-DW)
Arsenic	9.79	33
Cadmium	0.99	4.98
Copper	31.6	149
Lead	35.8	128
Mercury	0.18	1.06
Zinc	121	459

Weighted mean sediment contaminant concentrations in the SSTOU exceeded the TEC (and often PEC) reference values at virtually all sites in 2017 for copper and other contaminants which is why I don't think that the TEC or PEC are all that useful. However, the highest concentrations for copper and most other contaminants in sediment often occurred at sites in the vicinity of the Slag Canyon in Butte (upstream from the SSTOU). Downstream from the Slag Canyon, sediment COC concentrations tended to decrease rapidly through Subarea 1 and were lowest in Silver Bow Creek in Subarea 2. The report went on to say:

"**2.5.2 Contaminants of Concern**

Prior sampling [RESPEC, 2015a; 2015b; 2016b; 2017b] results suggest a major source, or sources, of metal contamination exists in Butte somewhere between Blacktail Creek at Father Sheehan Park (SS-01) and Silver Bow Creek above the Butte Reduction Works (SS-05A). In 2016, additional sample sites were added between SS-01 and SS-05A above the Metro Storm Drain (SS-04) and in Slag Canyon (SLAG-01) to identify potential sources. At each site, sediments were analyzed in only the fine (<0.063 mm) fraction and only for the COCs, excluding mercury.

> Data from 2016 and 2017 indicate a COC source, or sources, between each of these sites (SS- 01, SS-04, SLAG-01, and SS-05A). The most significant sources of cadmium, lead, and zinc appear to be between SS-04 and SLAG-01 whereas the most significant sources of arsenic and copper appear to be between SLAG-01 and SS-05A. We recommend continued monitoring of SS-04 and SLAG-01 to provide more data for these sites. If future results are similar to results in 2016-2017, finer resolution sampling between SS-04 and SS-05A may be warranted."

It looks like we need to stop this contaminated sediment from leaving the slag wall canyon area flowing down Silver Bow Creek and re-contaminating the SSTOU.

Thanks, Jim

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